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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/877,633	06/08/2001	Preeti G. Lal	PC-0040 CIP	9282

27904 7590 11/10/2003

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EXAMINER	
SLOBODYANSKY, ELIZABETH	

ART UNIT	PAPER NUMBER
1652	19

DATE MAILED: 11/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/877,633	LAL ET AL.	
	Examiner	Art Unit	
	Elizabeth Slobodyansky	1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *24-39* is/are pending in the application.

4a) Of the above claim(s) *24, 25, 35-39* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *26-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *14*.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

In view of the Brief on Appeal filed on August 20, 2003, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

The AF amendment filed May 19, 2003 amending the specification at pages 9-10 and amending claims 24, 26, 27, 31, 32 and 34 has been entered.

Claims 24-39 are pending. Claims 24, 25 and 35-39 are withdrawn (Office action mailed March 14, 2003).

Specification

The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code (for example, page 28, line 17). Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

The amendment filed May 19, 2003 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: on page 9, line 33, "SEQ ID NO:10" was replaced with "SEQ ID NO:9" and the clone No. was changed without indicating the support in the specification therefor or giving any explanation of the changes. Furthermore, clone Nos. for current SEQ ID NO:9 and SEQ ID NO:11 are incomplete compared to the Sequence Listing.

Applicant is required to cancel the new matter in the reply to this Office Action.

Furthermore, the specification on page 9, lines 28-29, states that "These preferred [mammalian] variants have about 90% identity to the human protein as shown in the table below" (emphasis added). However, the table that follows compares SEQ ID NO:1, i.e. the amino acid sequence, with three nucleotide sequences indicating percent identity as 89%, 90% and 89%. The sequence search performed at USPTO

does not reveal said percent identity either for SEQ ID NO:1 or for the encoding sequence of SEQ ID NO:2 when aligned with any sequence in the Sequence Listing.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 26 and 29-34 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 26 and 29-34 have been introduced by the amendment of December 17, 2002. Claim 26 has been amended on May 19, 2003.

Claim 26(b) is drawn to a DNA encoding a naturally occurring amino acid sequence that is at least 90% identical to SEQ ID NO:1. Claim 33(b) is drawn to a naturally occurring DNA that is at least 90% identical to SEQ ID NO: 2.

The Examiner is unable to locate adequate support in the specification for a DNA encoding a naturally occurring amino acid sequence that is at least 90% identical to SEQ ID NO:1 or a naturally occurring DNA that is at least 90% identical to SEQ ID

NO: 2. Thus there is no indication that said variants were within the scope of the invention as conceived by Applicants at the time the application was filed.

Claims 29 and 31 depend on claim 26 and further recite "a promoter sequence operably linked to a polynucleotide". There is no support in the specification for such claim language. Claims 30, 32 and 34 are rejected as depended from the rejected claim.

Accordingly, Applicants are required to cancel the new matter in the response to this Office Action.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 26-34 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility.

Claims 26-34 are directed to or depend from a DNA encoding SEQ ID NO:1. Applicants disclose a human nucleic acid sequence of SEQ ID NO: 2 encoding the protein having the amino acid sequence of SEQ ID NO:1. The asserted utility for SEQ ID NO:2 is as diagnostic of cancers, particularly lymphoma and cancer of the bladder,

colon, kidney, ovary, and testis (page 3, lines 4-5). The specification teaches that SEQ ID NO:1 has 55% identity to both high-glucose-regulated protein 8 and NY-REN-2 antigen (page 8, lines 32-33). There is no additional data to support any function for the protein of SEQ ID NO:1. Neither high-glucose-regulated protein 8 nor NY-REN-2 antigen are used as diagnostic of cancer. The specification discloses the expression of SEQ ID NO:2 in various libraries, each library constructed from the tissue removed from a single individual. With regard to lymphoma (one library), expression was two-fold greater than in activated lymphocytes and six-fold greater than in untreated or non-activated T-cells (page 32). The specification teaches that "no expression was seen in activated in three other libraries made from activated T-cells (page 32, line 31). With regard to cancer of the colon, the specification teaches that in metastatic cancer (one library) the expression was higher than in contained tumor (one library) and two-fold greater than in normal tissue (page 32, line 33, through page 33, line 18). With regard to cancer of the bladder, the expression is higher in one library in transitional cell carcinoma of the bladder (BADTUT08) than in normal tissue (page 33). With regard to cancer of the kidney, the expression is higher in one library in Wilms' tumor, slightly higher in one library in renal cell carcinoma and less high in two other libraries in renal cell carcinoma compared with one library from normal cortex. With regard to the ovary, only in one metastatic endometrial cancer library and not in other cancerous and non-cancerous ovarian libraries the expression was greater (page 34). With regard to the

testis, one library from testis tumor has higher expression than one library from embryonal carcinoma, the latter one higher than in normal tissue. Thus, it appears, that the specification presents data mostly obtained from one individual (one library) and compares it to library/libraries from other individuals. Unless the data are statistically significant, it is impossible to know whether the expression is indeed diagnostic of any cancer. It is known in the art that the expression of a protein can vary from one individual to another. On the other hand, in the state of cancer, the expression of most proteins is aberrant. Therefore, the specification provides no guidance as to how to correlate the expression of SEQ ID NO:2 and the specific cancer. Said correlation is not established in the prior art.

While the expression of SEQ ID NO:2 is may be indicative of cancer, it may be due to other conditions as well. The expression of a gene can be affected by various conditions not necessarily associated with or occurring in any type of cancer. Overall, SEQ ID NO:2 appears to be expressed or not expressed in cancerous as well as non-cancerous tissues (*supra*, and page 34, lines 38-40, for example).

Thus, there is no showing in the specification that the expression of SEQ ID NO:2 is specifically occurring in lymphoma and cancer of the bladder, colon, kidney, ovary, and testis and not other diseases or in healthy condition. Alternatively, there is no showing that the expression of SEQ ID NO:2 parallels the expression of any gene used as a direct diagnostic tool for any type of cancer.

However, in order for a polynucleotide to be useful, as asserted, for diagnosis of a disease, there must be a well-established or disclosed correlation or relationship between the claimed polynucleotide and a disease or disorder. The presence of a polynucleotide in tissue that is derived from cancer cells of one individual is not sufficient for establishing a utility in diagnosis of disease in the absence of some information regarding a correlative or causal relationship between the expression of the claimed cDNA and the disease. If a molecule is to be used as a surrogate for a disease state, some disease state must be identified in some way with the molecule in a statistically significant manner. There must be some expression pattern that would allow the claimed polynucleotide to be used in a diagnostic manner. Many proteins are expressed in normal tissues and diseased tissues. Therefore, one needs to know, e.g., that the claimed polynucleotide is either present only in cancer tissue to the exclusion of normal tissue or is expressed in higher levels in diseased tissue compared to normal tissue (i.e. overexpression). Evidence of a differential expression might serve as a basis for use of the claimed polynucleotide as a diagnostic for a disease. However, in the absence of any disclosed relationship between the claimed polynucleotide or the protein that is encoded thereby and any disease or disorder and the lack of any correlation between the claimed polynucleotide or the encoded protein with any known disease or disorder, any information obtained from an expression profile would only serve as the basis for further research on the observation itself.

Thus, obtaining of theoretically desired result of diagnosing lymphoma and cancer of the bladder, colon, kidney, ovary, and testis by measuring the expression of SEQ ID NO:2 is unpredictable based on the instant disclosure. A method for diagnosing of lymphoma and cancer of the bladder, colon, kidney, ovary, and testis would require or constitute carrying out further research to identify or reasonably confirm that cancer can be diagnosed using a DNA encoding SEQ ID NO:1.

Claim Rejections - 35 USC § 112

Claims 26-34 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

The following rejections would apply even if the utility for a DNA encoding SEQ ID NO:1 would have been established.

Claim Rejections - 35 USC § 112

Claims 26, 29-31, 33 and 34 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way

as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 26(b) is drawn to a DNA encoding a naturally occurring amino acid sequence that is at least 90% identical to SEQ ID NO: 1, claims 29-31 depend from claim 26. Claim 33(b) is drawn to a naturally occurring DNA that is at least 90% identical to SEQ ID NO: 2.

The claimed genera include species which are widely variant in function. Naturally occurring amino acid sequences having at least 90% identity to SEQ ID NO:1 or a DNA that is 90% identical to SEQ ID NO:2 includes allelic variants of SEQ ID NO:1 and all other loci which encode proteins having 90% identity to SEQ ID NO:1. The claimed polynucleotides comprise polynucleotides encoding polypeptides **whose function may or may not be altered** relative to the function of a polypeptide of SEQ ID NO:1. The claimed genera are functionally diverse as they encompass DNAs encoding polypeptides retaining the function of a polypeptide of SEQ ID NO:1, those which lack such function but are capable of inducing an antibody specific for SEQ ID NO: 1 as well as an enormous number of polypeptides with possibly other undisclosed functions.

There is no description in the specification of the mutational sites that exist in nature, and there is no description of how the structure of SEQ ID NO:2 relates to the structure of any naturally occurring alleles as well no disclosure of any function for naturally occurring variants. The general knowledge in the art concerning alleles dose

not provide any indication of how one allele is representative of unknown alleles. The nature of alleles is such that they are variant structures, and in the present state of the art structure of one does not provide guidance to the structure of others.

As such, neither the description of the structure and function of SEQ ID NO:1 and a DNA encoding thereof of SEQ ID NO:2 nor the disclosure solely structural features present in all members of the genus is sufficient to be representative of the attributes and features of the entire genus.

Therefore, one skilled in the art cannot reasonably conclude that the applicant had possession of the claimed invention at the time the instant application was filed.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 31 and 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 31 is confusing as being drawn to a method of producing a polypeptide wherein said polypeptide is an immunogenic fragment. An immunogenic fragment is defined implicitly in the specification on page 7, lines 2-3, as "an amino acid sequence from about five residues to about 15 residues". The conventional meaning of a "polypeptide" does not include such short sequences.

Claim 33 recites "a polynucleotide complementary to a polynucleotide". The specification teaches that "degree of complementarity and the use of nucleotide analogs affect the efficiency and stringency of hybridization reactions". Without knowing said degree, it is impossible to know the metes and bounds of the claim.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hillier et al. (GenBank EST, accession AA398704, August 12, 1997) the 447 bp EST nucleotides 1-274 of which are 100% identical to nucleotides 1755-2028 of SEQ ID NO:2.

Hillier et al. (GenBank EST, accession AA099707, May 11, 1997) the 421 bp EST nucleotides 1-328 of which are 98.2% identical to nucleotides 1700-2027 of SEQ ID NO:2.

Hillier et al. (GenBank EST, accession R69898, June 1, 1995) the 629 bp EST nucleotides 11-471 of which are 97.8% identical to nucleotides 1568-2027 of SEQ ID NO:2.

Hillier et al. (GenBank EST, accession AA460050, June 9, 1997) the 355 bp EST nucleotides 5-355 of which are 99.1% identical to nucleotides 519-870 of SEQ ID NO:2.

Adams et al. (GenBank EST, accession AA361068, April 21, 1997) the 341 bp EST nucleotides 1-341 of which are 99.1% identical to nucleotides 991-1330 of SEQ ID NO:2.

Response to Arguments

Applicant's arguments presented in Brief o Appeal filed August 20, 2003 have been fully considered but they are not persuasive.

Applicants argue that utility of a gene encoding SEQ ID NO:1 is based on the fact that it "is expressed in human colon, bladder, kidney, ovary, and testis tissues and in tissues associated with the immune response an cancer (Specification, e.g., at page 9, lines 11-26, and in Example VIII, pages 32-35). In particular, similarities between SEQ ID NO:1 and NY-REN-2 tumor antigen (GI 5360085) are described in the specification, for example, at page 8, lines 26-33 and in Figure 2. Therefore, the claimed invention has numerous practical, beneficial uses in toxicology testing, drug development, and the diagnosis of disease, none of which requires knowledge of how the polypeptide coded for by the polynucleotide actually functions (Remarks, page 7).

The examiner notes that the specification lacks any mentioning of toxicology testing. While toxicology testing may be known in the art at the time of filing, as an essential element, it should be described in the specification.

Applicants further refer to the Bedilion declaration for discussion of "the many reasons why a person skilled in the art reading the Lal '750 application on September 23, 1997 (the Lal '750 application is the priority application on which the patent application is based) would have understood that application to disclose the claimed polynucleotide to be useful in a number of gene expression monitoring applications, *e.g.*, as a highly specific probe for the expression of that specific polynucleotide in connection with the development of drugs and the monitoring of the activity of such drugs. (Bedilion Declaration at, *e.g.*, 10-15)" (Brief, paragraph bridging pages 8-9). They further argue with reference to the Bedilion Declaration that "a c DNA microarray that contained the SEQ ID NO:1-encoding polynucleotides would be a more useful tool than cDNA microarrays that did not contain the polynucleotides in connection with conducting gene expression monitoring studies on proposed (or actual) drugs fro treating cancer for such purposes as evaluating their efficacy and toxicity (Bedilion Declaration, 15) (page 9, second paragraph).

The examiner does not argue the utility of cDNA microarrays in general. The importance of toxicology testing and the use of DNA arrays therefor is unquestionable. What is not agreed with is the usefulness of a microarray comprising a DNA encoding SEQ ID NO:1 if the same microarray without it did not have utility. Furthermore, the specification does not disclose what drug(s) SEQ ID NO:1 would be useful in developing, or what disease(s) it would be useful in diagnosing. As explained in the

rejection above, the specification provides no basis for concluding that SEQ ID NO:1 is associated with any specific disease.

Applicants argue that "Given the fact that the claimed polynucleotide is known to be expressed, its utility as a measuring and analyzing instrument for expression levels is as indisputable as a scale's utility for measuring weight" (page 10, last paragraph). The examiner disagrees with that analogy because this analogy is fair with regard to scales and microarrays in general. In general, microarrays comprising useful polynucleotides are useful. However, it is not analogous to a microarray which utility is solely based on the nucleotide of the instant invention. In other words, the addition of a DNA encoding SEQ ID NO:1 to a microarray does not impart the utility if the microarray did not have one.

Further, the specification's only disclosure related to microarrays is found in definition of "Arrays" on page 5, lines 15-21. That disclosure states only that in arrays "at least one of the cDNAs or antibodies represents control or standard, and the other, a cDNA or antibody of diagnostic or therapeutic interest" (specification page 5, lines 15-17). The specification does not disclose the use of microarrays for toxicology testing. In addition, the specification does not disclose what disorder(s) could be diagnosed using a microarray comprising the claimed polynucleotides, nor what to do with any "therapeutic agents" developed using such a microarray.

Appellants argue that the use of microarrays in such processes is "well-established" and therefore need not be expressly disclosed in the specification. See the Appeal Brief, pages 10-14. However, the references that Appellants cite to show the "well-established" nature of these utilities were all published after the filing date of the instant application. Thus, none of Appellants' references provide evidence that, as of the date the present application was filed, those of skill in the art would have recognized the asserted utilities as well-established.

Applicants further refer to the Bedilion Declaration for showing "that a number of pre-September 23, 1997 publications confirm and further establish the utility of cDNA microarrays in a wide range of drug development gene expression monitoring applications at the time the Lal '750 application was filed (Bedilion Declaration 10-14; Bedilion Exhibits A-G))" (page 11, 2nd full paragraph). The examiner does not argue the utility of cDNA microarrays in general and, specifically, the utility of the whole genome microarrays to which Applicants refer while discussing the Lashkari et al. article (paragraph bridging pages 12 and 13).

Dr. Bedilion's Declaration attests to the usefulness of microarrays in toxicology testing. These issues were addressed above in response to Remarks. The examiner notes that the publications referred to in the declaration have been never mentioned in the specification or supplied with IDS. For example, Dr. Bedilion refers to the Heller et al. article to support the utility of any microarray comprising any expressed

polynucleotide. However, this article teaches a specific design for microarrays. Heller et al. teach that "two approaches for the fabrication of c DNA microarrays were use in this study. In the first approach, known human genes of probable importance in RA were identified. ... In the second approach, the microarray containing the 1056 human genes from the peripheral blood lymphocyte library was prepared" (Heller et al., paragraph bridging pages 2150-2151, emphasis added). As mentioned above, in the instant case, the importance of the claimed gene is unknown and one of ordinary skill in the art would not have known what particular cells to choose.

Dr. Bedilion repeatedly states that "microarray that contained the SEQ ID NO:1-encoding polynucleotides would be a more useful tool than cDNA microarrays that did not contain the polynucleotides in connection with conducting gene expression monitoring studies on proposed (or actual) drugs from treating cell proliferative disorders for such purposes as evaluating their efficacy and toxicity" (Declaration, paragraph bridging pages 11-12). For the reasons given above, this is not persuasive.

Applicants further argue usefulness of DNA arrays in toxicology (pages 13-15). The importance of toxicology testing and the use of DNA arrays therefor is unquestionable. What is not agreed with is the usefulness of a microarray comprising a DNA encoding SEQ ID NO:1 if the same microarray without it did not have utility. For the same reasons, examples of benefits presented on pages 15-16 are not persuasive because they attest to the usefulness of databases that do not comprise a gene of the

instant invention but other DNAs that represent genes of interest such as the use of a known transporter gene (page 14, penultimate paragraph).

Applicants further argue that "the similarity of the polypeptide encoded by the claimed invention to another polypeptide of undisputed utility demonstrates utility" (page 15 and in discussion on pages 15-19). Applicants refer to the utility of DNA encoding SEQ ID NO:1 based on the relationship between the polypeptide it encodes, cancer marker protein, and other polypeptides of unquestionable utility, tumor antigen proteins (page 15, in "**C**"). This is unpersuasive because as discussed above, the specification did not establish that the polypeptide of SEQ ID NO:1 is a cancer marker protein or tumor antigen protein, the latter term never appeared in the specification.

Applicants further characterize the examiner's position as follows: "The Patent Examiner's primary rejection of the claimed invention is based o the ground that without information as to the precise "biological role" of the claimed invention, the claimed invention's utility is not sufficiently specific. According to the Examiner, it is not enough that a person of ordinary skill in the art could use and, in fact, would want to use the claimed invention either by itself or in a cDNA microarray to monitor expression of genes for such applications as the evaluation of a drug's efficacy and toxicity. The Examiner would require, in addition, that the Appellant provide a specific and substantial interpretation of the results generated in any given expression analysis" (page 17, 1st paragraph). Contrary to this characterization, the examiner agrees that

any cancer marker protein is useful notwithstanding the knowledge of the mechanism of its action and specific function. However, in the instant case, there is no showing that a polypeptide of SEQ ID NO:1 is a cancer marker protein. Applicants assign this utility to SEQ ID NO: 1 based on its 55% homology to the NY-REN-2 tumor antigen (pages 20-21). Furthermore, the Bedilion Declaration states that "SEQ ID NO: 1 has 55% identity to the sequence of the NY-REN-2 tumor antigen (GI 5360085). The NY-REN-2 tumor antigen is described in the Scanlan article (See Tab I). Because of the relationship between the cancer marker protein of SEQ ID NO:1 and known functional proteins, and because those known functional proteins are implicated in cancer, persons skilled in the art in September, 1997 would have considered SEQ ID NO:1-encoding polynucleotides to be an important and valuable addition to a cDNA microarray for use in research into cancer " (Declaration, paragraph bridging pages 13-14). The examiner agrees that if a polypeptide of SEQ ID NO: 1 is a cancer marker protein, it is useful. However, in this case, it was not shown that a polypeptide of SEQ ID NO: 1 is a cancer marker protein. Moreover, Scanlan et al. do not disclose that NY-REN-2 is a specific marker for any cancer. In fact, they teach that NY-REN-2 is broadly expressed in normal tissues and reacts with sera from normal donors, indicating that its immunogenecity is not restricted to cancer (abstract; page 459, 1st column, 1st paragraph; page 460, Table III; page 462, Table IV).

Finally, it is noteworthy that no claims on appeal is directed to the microarray on which Appellants base most of their broad assertions of utility. In addition to a polynucleotide encoding SEQ ID NO:1, Appellants also claim a recombinant polynucleotide containing a polynucleotide encoding SEQ ID NO:1 under control of a promoter, a host cell containing thereof and a method of making the protein of SEQ ID NO:1. Neither the method nor either product has any apparent use in a microarray gene-expression assay.

It would appear, therefore, that Appellants are using the asserted microarray utility to provide a utility that can be asserted for any isolated cDNA, regardless of how little is known about it, which (they hope) will nonetheless serve as a basis for patent protection of all related products and methods and secure for Appellants any value that might become apparent in the future, after they or others have further characterized the claimed products. It was precisely this type of result that the Brenner Court sought to avoid by requiring disclosure of a substantial utility to satisfy § 101. See 148 U.S. at 535-36, 148 USPQ at 696: [The Court was not] "blind to the prospect that what now seems without 'use' may tomorrow command the grateful attention of the public. But a patent is not a hunting license. It is not a reward for the search, but compensation for its successful conclusion." Id.

The polynucleotides of the instant claims may indeed prove to be very useful (and valuable), after the in vivo role of the encoded protein is discovered. The work

required to confer value on a polynucleotide encoding SEQ ID NO:1, however, remains to be done.

With regard to the written description, Appellants argue that "the term "naturally-occurring" is a well-known term in the art" (page 22, 2nd paragraph). The written description is based on the fact that the genus of naturally-occurring molecules having at least 90% identity to the specific sequence is insufficiently described because the relationship between structure and function common to all members of the genus is not disclosed and it is unpredictable based on the disclosed species.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth Slobodyansky whose telephone number is (703) 306-3222. The examiner can normally be reached Monday through Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Ponnathapura Achutamurthy, can be reached at (703) 308-3804. The FAX phone number for Technology Center 1600 is (703) 308-4242.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Center receptionist whose telephone number is (703) 308-0196.

E. Slobodyansky

Elizabeth Slobodyansky, PhD
Primary Examiner

PONNATHAPU ACHUTAMURTHY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600

November 5, 2003